

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT
APPEALS AND INTERFERENCES

In Re Application of:)
Ken A. Nishimura et al.)
Serial No.: 10/771,738) Group Art Unit: 2629
Filed: February 4, 2004) Examiner: Seok Yun Moon
For: METHOD AND APPARATUS)
TO ENHANCE CONTRAST) Atty Dkt. 10030616-1
IN ELECTRO-OPTICAL)
DISPLAY DEVICES)

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Examiner:

This Appeal Brief is submitted in response to the final rejection of the claims mailed October 19, 2007. A Notice of Appeal was filed on February 5, 2008.

This brief contains items under the following headings as required by 37 CFR §41.37 and MPEP §1206:

- (1) Real Party In Interest
- (2) Related Appeals and Interferences
- (3) Status of Claims
- (4) Status of Amendments
- (5) Summary of Claimed Subject Matter
- (6) Grounds of Rejection to be Reviewed on Appeal
- (7) Argument
- (8) Claims Appendix
- (9) Evidence Appendix
- (10) Related Proceedings Appendix

(1) REAL PARTY IN INTEREST

The real party in interest in the above-referenced patent application is Avago Technologies ECBU IP (Singapore) Pte. Ltd., having an address at No. 1 Yishun Avenue 7, Singapore 768923.

(2) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences currently known to appellants, appellants' legal representatives or the assignee, which will directly affect, or be directly affected by, or have a bearing on, the Board's decision.

(3) STATUS OF CLAIMS

Claims 1-24 were filed with the application. Claims 1-4, 6-8, 10-14, and 16-24 are currently pending in the application. Claims 5, 9, and 15 are canceled. Claim 6 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The rejection of claims 1-4, 7-8, 10-14, and 16-24 is appealed.

(4) STATUS OF AMENDMENTS

No amendments were filed or entered subsequently to the Final Office Action mailed October 19, 2007.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

Appellants' invention as independently claimed is summarized and explained below with reference numerals, specification page numbers and drawing figure numbers indicating where the claim finds support in the specification and drawings.

1. A drive circuit for driving a display device (110) comprising electro-optical material (220) disposed between a common electrode (235) and an array of pixel electrodes (215) [Fig. 1, pg. 7, lines 6-14], said drive circuit comprising:

pixel drive circuits (250) connected to respective ones of the pixel electrodes (215) and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum [Figs. 6 &1; pg. 14, line 21; pg. 7, line 6]; and

a common drive circuit (620) connected to the common electrode (235) and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage [Figs. 6 &1; pg. 14, line 21; pg. 7, line 13].

17. A method for driving a display device (110) comprising electro-optical material (220) disposed between a common electrode

(235) and an array of pixel electrodes (215) [Fig. 1, pg. 7, lines 6-14], said method comprising:

driving each of the pixel electrodes (215) with a respective pixel drive signal alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum [Fig. 1; pg. 7, line 7]; and

driving the common electrode (235) with a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage [Fig. 1; pg. 7, line 13].

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Claims 1-4, 7, 10, 13, 14, 16-19 and 21 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kitajima et al. (US 6,064,358).
- B. Claims 8, 11, 20 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US 6,064,358).
- C. Claims 12, 23, and 24 stand rejected under U.S.C. 35 103(a) as being unpatentable over Kitajima et al. (US 6,064,358) in view of Kawaguchi et al. (US 6,677,925).

(7) ARGUMENT

Argument re Issue A

Claims 1-4, 7, 10, 13, 14, 16-19 and 21 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kitajima et al. (US 6,064,358). Appellants respectfully assert, for at least the reasons advanced below, that claims 1-4, 7, 10, 13, 14, 16-19, and 21 are not anticipated by Kitajima et al. under 35 U.S.C. 102(b).

Claims 1 and 17

Claim 1 recites the following:

A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Claim 17 recites the following:

A method for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said method comprising:

driving each of the pixel electrodes with a respective pixel drive signal alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

driving the common electrode with a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Regarding independent claims 1 and 17, Kitajima et al. do not disclose or teach all the elements in claims 1 and 17. Kitajima et al. do not teach a common drive circuit connected to a common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than a process-limited maximum. In addition, Kitajima et al. do not teach or suggest pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum. No where in Kitajima is it

taught or suggested that a process-limited voltage be used with respect to drive signals.

The Examiner on page 2 of the Final Office Action interprets "VDH" of Kitajima [fig. 26(d)] as a process-limited maximum since the value of "VDH" is a limited maximum value of the signal "VD" during the signal driving process. The term, "process-limited" in claims 1 and 17 refers to modern integrated circuit processes (see pg. 3, lines 4-10 of the application) not a signal driving process.

For at least the reasons advanced above, Appellants respectfully assert that the current rejection of claims 1 and 17 is improper and should, therefore, be overruled. Therefore, Appellants respectfully request that the rejection of claims 1 and 17 be withdrawn.

Claims 2 and 18

Claim 2 recites the following:

The drive circuit of Claim 1, wherein the first low voltage and the second low voltage differ in voltage by less than or equal to a threshold voltage at which an electro-optical response is produced by the electro-optical material.

Claim 1 recites the following:

A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Claim 18 recites the following:

The method of Claim 17, further comprising:
determining a threshold voltage at which an electro-optical response is produced by the electro-optical material; and
setting the first low voltage and the second low voltage to differ in voltage by less than or equal to the threshold voltage and the first high voltage and the second high voltage to differ in voltage by less than or equal to the threshold voltage.

Claim 17 recites the following:

A method for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said method comprising:

driving each of the pixel electrodes with a respective pixel drive signal alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

driving the common electrode with a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Regarding dependent claims 2 and 18, Kitajima et al. do not disclose or teach all the elements in claims 2 and 18. Kitajima et al. do not teach a first low voltage and a second low voltage differing in voltage by less than or equal to a threshold voltage at which an electro-optical response is produced by an electro-optical material. Kitajima teaches a difference between two signals ($V_{DL} - V_{CL}$) however Kitajima do not teach or suggest that this difference is related to a threshold voltage at which an electro-optical response is produced by an electro-optical material.

The Examiner on page 2 of the Final Office Action states the following:

... it is *inherent* for the display of Kitamima that the voltage difference "VDL-VCL" being less than or equal to the threshold voltage since if the voltage deference between the lowest voltage of the signal applied to the common electrodes and the lowest voltage of the signal applied to the data electrodes is greater than the threshold voltage, the liquid crystals included in the pixels of the display would be controlled by the voltage difference, and thus the liquid crystals of the display would not control the transmission of the back light at the right timing.
(Emphasis added)

MPEP Section 2112 (IV) sets forth the following regarding inherency:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted)

Appellants respectfully disagree with the Examiner that it is inherent for the display of Kitajima that the voltage difference "VDL-

VCL" must be less than or equal to the threshold voltage. The liquid crystals included in the pixels of the display may be controlled by the voltage difference and retain control of the transmission of the back light with correct timing.

For at least the reasons advanced above, Appellants respectfully assert that the current rejection of claims 2 and 18 is improper and should, therefore, be overruled. Therefore, Appellants respectfully request that the rejection of claims 2 and 18 be withdrawn.

Claim 3

Claim 3 recites the following:

The drive circuit of Claim 2, wherein the first high voltage and the second high voltage differ in voltage by less than or equal to the threshold voltage.

Claim 1 recites the following:

A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Regarding dependent claim 3, Kitajima et al. do not disclose or teach all the elements in claim 3. Kitajima et al. do not teach a first high voltage and a second high voltage differing in voltage by less than or equal to a threshold voltage. Kitajima teaches a difference between two signals ($V_{DH}-V_{CH}$) however Kitajima does not teach or suggest that this difference is related to a threshold voltage.

The Examiner on pages 2 and 3 of the Final Office Action states the following:

...it is *inherent* for the display of Kitajima that the voltage difference "VDH-VCH" being less than or equal to the threshold voltage since if the voltage deference between the highest voltage of the signal applied to the common electrodes and the highest voltage of the signal applied to the data electrodes is greater than the threshold voltage, the liquid crystals included in the pixels of the display would be controlled by the voltage difference, and thus the liquid crystals of the display would not control the transmission of the back light at the right timing.
(Emphasis added)

Appellants respectfully disagree with the Examiner that it is inherent for the display of Kitajima that the voltage difference "VDH-VCH" must be less than or equal to the threshold voltage. The liquid

crystals included in the pixels of the display may be controlled by the voltage difference and retain control of the transmission of the back light with correct timing.

For at least the reasons advanced above, Appellants respectfully assert that the current rejection of claim 3 is improper and should, therefore, be overruled. Therefore, Appellants respectfully request that the rejection of claim 3 be withdrawn.

Claims 4, 7, 10, 14, 19 and 21

Claim 4 recites the following:

The drive circuit of Claim 1, wherein the common drive signal is substantially periodic between the second low voltage and the second high voltage.

Claim 7 recites the following:

The drive circuit of Claim 1, wherein said pixel drive circuits are located on a substrate of the display device including the array of pixel electrodes, said pixel drive circuits underlying respective ones of the pixel electrodes.

Claim 10 recites the following:

The drive circuit of Claim 7, wherein said common drive circuit is located external to the substrate.

Claim 14 recites the following:

The drive circuit of Claim 1, wherein at least one of said pixel drive circuits and said common drive circuit is further operable to vary the phase relationship between the respective pixel drive signals and the common drive signal.

Claim 1 recites the following

A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Claim 19 recites the following;

The method of Claim 17, wherein said driving the common electrode includes generating the common drive signal substantially periodic between the second low voltage and the second high voltage.

Claim 21 recites the following:

The method of Claim 17, wherein said driving the common electrode further includes generating the common drive signal external to a substrate of the display device, the substrate including the array of pixel electrodes.

Claim 17 recites the following:

A method for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said method comprising:

driving each of the pixel electrodes with a respective pixel drive signal alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

driving the common electrode with a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Claims 4, 7, 10, and 14 are dependent on claim 1 and therefore include all limitations of claim 1.

Claims 4, 7, 10, and 14 are allowable at least as depending from allowable base claim 1. For purposes of this appeal, claims 4, 7, 10, and 14 stand or fall with claim 1.

Claims 19 and 21 are dependent on claim 17 and therefore include all limitations of claim 17.

Claims 19 and 21 are allowable at least as depending from allowable base claim 17. For purposes of this appeal, claims 19 and 21 stand or fall with claim 17.

Claims 13 and 16

Claim 13 recites the following:

The drive circuit of Claim 7, wherein the process-limited maximum is the breakdown voltage of said pixel drive circuits.

Claim 16 recites the following:

The drive circuit of Claim 14, wherein the process-limited maximum is less than or equal to 1.8 volts.

Claim 1 recites the following:

A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

As to claims 13 and 16, the Examiner states on page 3 of the Final Office Action that other factors might lower the amplitude of the breakdown voltage, but would not cause the breakdown voltage to be higher than 1.8 volts. Appellants respectfully disagree.

As discussed above, the mere fact that a certain thing may result from a given set of circumstances is not sufficient. The certain thing must result from a given set of circumstances. In this case, the fact that other factors might lower the amplitude of the breakdown voltage is insufficient to read on claims 13 and 16.

For at least the reasons advanced above, Appellants respectfully assert that the current rejection of claims 13 and 16 is improper and should, therefore, be overruled. Therefore, Appellants respectfully request that the rejection of claims 13 and 16 be withdrawn.

Argument re Issue B

Claims 8, 11, 20 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US 6,064,358). Appellants respectfully assert, for at least the reasons advanced below, that claims 8, 11, 20 and 22 are not unpatentable over Kitajima et al. (US 6,064,358) under 35 U.S.C. 103(a).

Claims 8, 11, 20 and 22

Claim 8 recites the following:

The drive circuit of Claim 7, wherein said common drive circuit is located on the substrate.

Claim 11 recites the following:

The drive circuit of Claim 10, wherein the substrate includes a timing circuit connected to said common drive circuit to control the timing of the common drive signal.

Claim 1 recites the following:

A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Claim 20 recites the following:

The method of Claim 17, wherein said driving the common electrode includes generating the common drive signal on a substrate of the display device, the substrate including the array of pixel electrodes.

Claim 22 recites the following:

The method of Claim 21, wherein said generating the common drive signal further includes generating a timing signal on the substrate to control the timing of the common drive signal.

Claim 17 recites the following:

A method for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said method comprising:

driving each of the pixel electrodes with a respective pixel drive signal alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

driving the common electrode with a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Claims 8 and 11 are dependent on claim 1 and therefore include all limitations of claim 1.

Claims 8 and 11 are allowable at least as depending from allowable base claim 1. For purposes of this appeal, claims 8 and 11 stand or fall with claim 1.

Claims 20 and 22 are dependent on claim 17 and therefore include all limitations of claim 17.

Claims 20 and 22 are allowable at least as depending from allowable base claim 17. For purposes of this appeal, claims 20 and 22 stand or fall with claim 17.

Argument re Issue C

Claims 12, 23, and 24 stand rejected under U.S.C. 35 103(a) as being unpatentable over Kitajima et al. (US 6,064,358) in view of Kawaguchi et al. (US 6,677,925). Appellants respectfully assert, for at least the reasons advanced below, that claims 12, 23, and 24 are not unpatentable over Kitajima et al. (US 6,064,358) in view of Kawaguchi et al. (US 6,677,925).

Claim 12, 23 and 24

Claim 12 recites the following:

The drive circuit of Claim 11, wherein the timing circuit alternates between the first low voltage and the first high voltage, said common drive circuit converting the first low voltage to the second low voltage and the first high voltage to the second high voltage.

Claim 1 recites the following:

A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

Claim 23 recites the following:

The method of Claim 22, wherein said generating the timing signal further includes alternating the timing signal between the first low voltage and the first high voltage, said driving the common electrode further comprising converting the first low voltage to the second low voltage and the first high voltage to the second high voltage.

Claim 24 recites the following:

The method of Claim 17, further comprising:
varying phase relations between the respective pixel drive signals and the common drive signal.

Claim 17 recites the following:

A method for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said method comprising:

driving each of the pixel electrodes with a respective pixel drive signal alternating between a first high voltage and a first low voltage

differing in voltage by less than or equal to a process-limited maximum; and

driving the common electrode with a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). In addressing obviousness determinations under 35 U.S.C. § 103, the Supreme Court in *KSR International Co. v. Teleflex Inc.*, No. 04-1350 (April 30, 2007), reaffirmed many of its precedents relating to obviousness including its holding in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). In *Graham*, the Court set out an objective analysis for applying the statutory language of §103:

Under §103, the scope and content of the prior art are to be determined, differences between the prior art and the claims at issue are to be ascertained, and the level of ordinary skill in the pertinent art are to be resolved. Against this background the obviousness or non-obviousness of the subject matter is to be determined. Such secondary considerations as commercial success, long-felt but unresolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. *KSR, slip op.* at 2 (citing *Graham*, 383 U.S. at 17-18).

In *KSR*, the Court also reaffirmed that “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *Id.* at 14. In this regard, the *KSR* court stated that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does ... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *Id.* at 14-15. Traditionally, to establish a *prima facie* case of obviousness, the CCPA and the Federal Circuit have required that the prior art not only include all of the claimed elements, but also some teaching, suggestion, or motivation to combine the known elements in the same manner set forth in the claim at issue. *See, e.g., ASC Hospital Systems Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984) (holding that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination.); *In re Mills*, 16 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 1990) (holding that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination). In *KSR*, the court noted that the demonstration of a teaching, suggestion, or motivation to combine

provides a "helpful insight" in determining whether claimed subject matter is obvious. *KSR*, *slip op.* at 14. However, the court rejected a *rigid* application of the "TSM" test. *Id.* at 11. In this regard, the court stated:

The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and explicit content of issued patents. The diversity of inventive pursuit and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. *Id.* at 15.

In other words, the *KSR* court rejected a rigid application of the TSM test which requires that a teaching, suggestion or motivation to combine elements in a particular manner must be explicitly found in the cited prior art. Instead, the *KSR* court favored a more expansive view of the sources of evidence that may be considered in determining an apparent reason to combine known elements by stating:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art all in order to determine whether there was an apparent reason to combine in the known elements in the fashion claimed in the patent at issue. *Id.* at 14.

The *KSR* court also noted that there is not necessarily an inconsistency between the idea underlying the TSM test and the *Graham* analysis, and it further stated that the broader application of the TSM test found in certain Federal Circuit decisions appears to be consistent with *Graham*. *Id.* at 17-18 (citing *DyStar Textilfarben GmbH and Co. v. C.H. Patrick Co.*, 464 F.3d 1356, 1367 (2006) (“Our suggestion test is in actuality quite flexible and not only permits but *requires* consideration of common knowledge and common sense”); *Alza Corp. v. Mylan Labs, Inc.*, 464 F.3d 1286, 1291 (2006) (“There is flexibility in our obviousness jurisprudence because a motivation may be found *implicitly* in the prior art. We do not have a rigid test that requires a teaching to combine ... ”).

Furthermore, the *KSR* court did not diminish the requirement for objective evidence of obviousness. *Id.* at 14 (“To facilitate review, this analysis should be made explicit. See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”); see also, *In re Lee*, 61 U.S.P.Q.2d 1430,

1436 (Fed. Cir. 2002) (holding that the factual inquiry whether to combine references must be thorough and searching, and that it must be based on *objective evidence of record*).

When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). The Federal Circuit has warned that the Examiner must not, "fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *In re Dembiczaik*, F.3d 994, 999, 50 U.S.P.Q.2d 52 (Fed. Cir. 1999) (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983)).

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983); M.P.E.P. § 2145. Moreover, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not

sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959); see M.P.E.P. § 2143.01(VI). If the proposed modification or combination would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); see M.P.E.P. § 2143.01(V).

It appears that the Examiner's statement above is based solely on hindsight derived from Appellants' specification.

For at least the reasons advanced above, Appellants respectfully assert that the current rejection of claims 12 and 23 is improper and should, therefore, be overruled. Therefore, Appellants respectfully request that the rejection of claims 12 and 23 be withdrawn.

Claim 24 is dependent on claim 17 and therefore include all limitations of claim 17.

Claim 24 is allowable at least as depending from allowable base claim 17. For purposes of this appeal, claim 24 stands or falls with claim 17.

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Ken A. Nishimura et al.
Atty Dkt. 10030616-1

Respectfully submitted,
KLAAS, LAW, O'MEARA & MALKIN, P.C.

April 7, 2008

/John Pessetto/
John R. Pessetto
Registration No. 48,369
1999 Broadway, Ste 2225
Denver, CO 80202
(303) 298-9888

(8) CLAIMS APPENDIX

1. A drive circuit for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said drive circuit comprising:

pixel drive circuits connected to respective ones of the pixel electrodes and operable to generate respective pixel drive signals alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

a common drive circuit connected to the common electrode and operable to generate a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

2. The drive circuit of Claim 1, wherein the first low voltage and the second low voltage differ in voltage by less than or equal to a threshold voltage at which an electro-optical response is produced by the electro-optical material.

3. The drive circuit of Claim 2, wherein the first high voltage and the second high voltage differ in voltage by less than or equal to the threshold voltage.

4. The drive circuit of Claim 1, wherein the common drive signal is substantially periodic between the second low voltage and the second high voltage.

5. (Canceled)

6. The drive circuit of Claim 1, wherein the second low voltage is -1.0 volts and the second high voltage is 2.8 volts.

7. The drive circuit of Claim 1, wherein said pixel drive circuits are located on a substrate of the display device including the array of pixel electrodes, said pixel drive circuits underlying respective ones of the pixel electrodes.

8. The drive circuit of Claim 7, wherein said common drive circuit is located on the substrate.

9. (Canceled)

10. The drive circuit of Claim 7, wherein said common drive circuit is located external to the substrate.

11. The drive circuit of Claim 10, wherein the substrate includes a timing circuit connected to said common drive circuit to control the timing of the common drive signal.

12. The drive circuit of Claim 11, wherein the timing circuit alternates between the first low voltage and the first high voltage, said common drive circuit converting the first low voltage to the second low voltage and the first high voltage to the second high voltage.

13. The drive circuit of Claim 7, wherein the process-limited maximum is the breakdown voltage of said pixel drive circuits.

14. The drive circuit of Claim 1, wherein at least one of said pixel drive circuits and said common drive circuit is further operable to vary the phase relationship between the respective pixel drive signals and the common drive signal.

15. (Canceled)

16. The drive circuit of Claim 14, wherein the process-limited maximum is less than or equal to 1.8 volts.

17. A method for driving a display device comprising electro-optical material disposed between a common electrode and an array of pixel electrodes, said method comprising:

driving each of the pixel electrodes with a respective pixel drive

signal alternating between a first high voltage and a first low voltage differing in voltage by less than or equal to a process-limited maximum; and

driving the common electrode with a common drive signal alternating between a second high voltage and a second low voltage differing in voltage by more than the process-limited maximum, the common drive signal being asymmetrically bipolar with respect to the first low voltage.

18. The method of Claim 17, further comprising:
 - determining a threshold voltage at which an electro-optical response is produced by the electro-optical material; and
 - setting the first low voltage and the second low voltage to differ in voltage by less than or equal to the threshold voltage and the first high voltage and the second high voltage to differ in voltage by less than or equal to the threshold voltage.

19. The method of Claim 17, wherein said driving the common electrode includes generating the common drive signal substantially periodic between the second low voltage and the second high voltage.

20. The method of Claim 17, wherein said driving the common electrode includes generating the common drive signal on a substrate of the display device, the substrate including the array of

pixel electrodes.

21. The method of Claim 17, wherein said driving the common electrode further includes generating the common drive signal external to a substrate of the display device, the substrate including the array of pixel electrodes.

22. The method of Claim 21, wherein said generating the common drive signal further includes generating a timing signal on the substrate to control the timing of the common drive signal.

23. The method of Claim 22, wherein said generating the timing signal further includes alternating the timing signal between the first low voltage and the first high voltage, said driving the common electrode further comprising converting the first low voltage to the second low voltage and the first high voltage to the second high voltage.

24. The method of Claim 17, further comprising:
varying phase relations between the respective pixel drive signals and the common drive signal.

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(9) EVIDENCE APPENDIX

No evidence pursuant to §§ 1.130, 1.131 or 1.132 or entered by or relied upon by the Examiner is being submitted.

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(10) RELATED PROCEEDINGS APPENDIX

No related proceedings are referenced in (2) above.
Accordingly, no copies of decisions in related proceedings are provided.